

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
)	
Revision of the Commission's Rules to)	CC Docket No. 94-102
Ensure Compatibility With Enhanced 911)	
Emergency Calling Systems)	

To: The Commission

COMMENTS OF NEC AMERICA, INC.

NEC America, Inc. ("NEC") hereby submits these comments in response to the Commission's Further Notice of Proposed Rulemaking (the "Further Notice") released on December 20, 2002 in the above-captioned proceeding. ^{1/} Specifically, NEC responds to the Commission's inquiries in the Further Notice relating to whether multi-line telephone systems ("MLTS") should be required to deliver E911 call back and location data, known as Automatic Number Identification ("ANI") and Automatic Location Identification ("ALI").

NEC, an affiliate of NEC Corporation, develops, manufactures and markets a complete line of advanced communications products and software for public and private networks, including Private Branch Exchange ("PBX") systems and key telephone systems. NEC's product line includes integrated wireless and IP-

^{1/} Revision of the Commission's Rules to Ensure Compatibility With Enhanced 911 Emergency Calling Systems, CC Docket No. 94-102, *Further Notice of Proposed Rulemaking*, FCC 02-326 (rel. Dec. 20, 2002) ("*Further Notice*").

based PBX solutions. ^{2/} NEC's MLTS products, with some limited exceptions for its wireless products, will shortly have the capability to deliver E911 ANI and ALI in a manner that complies with requirements applicable in each of the states that have adopted legislation mandating such MLTS capabilities. ^{3/}

I. Overview and Summary

NEC applauds the Commission for its consideration of issues relating to MLTS E911 capabilities, as NEC believes Federal involvement would be helpful in promoting the nationwide availability of such capabilities. NEC generally agrees with the recommendations contained in the NENA Model Legislation and the E911 Consensus Group proposal, ^{4/} and urges the Commission to recognize four core truths in its consideration of the issue. First, the Commission should recognize that a piece-meal approach to MLTS E911 capability will not be sufficient. All participants of the process – the PSAPs, MLTS manufacturers, LECs, and MLTS operators – have a role to play in the process. The Commission should issue

^{2/} By deploying picocells served by individual or groups of transceivers, NEC's WIRED FOR WIRELESS solution provides continuous coverage throughout a multi-storied building or across a multi-building campus, permitting users to walk freely around the workplace while on a call. A highly-scalable product, the system can support as many as 16,000 mobile users with over 3,000 zone transceivers providing a coverage area of 17 million square feet.

^{3/} The limitations of wireless MLTS equipment is discussed in greater detail, *infra* section IV.

^{4/} See *Further Notice* at ¶¶ 88-89 (referring to National Emergency Number Association ("NENA"), "Model Legislation, Enhanced 9-1-1 for Multi-line Telephone Systems" ("Model Legislation"); and letter from James Blaszk, Counsel for the Ad Hoc Telecommunications Users Group, to William Caton, Acting Secretary, FCC (Apr. 1, 1997) ("Consensus Group Proposal")).

national requirements and pre-empt inconsistent state and local laws. Second, the Commission should be open to the ability of new technology to alter the traditional E911 paradigm and foster the efficient delivery of better and more reliable location information. Options that were not envisioned several years ago, when E911 capability for MLTS was first examined, should now be considered. Third, the Commission should strive to minimize the costs associated with E911 compliance. Where less costly solutions are available, the Commission should remove the impediments to choosing such options. Fourth, the Commission should avoid imposing E911 obligations where no evidence has been provided indicating that the requirements can be satisfied with existing and available technology. This problem has plagued implementation of wireless E911, and should not be repeated here. NEC addresses these points more specifically below.

II. MLTS E911 Compliance Is Technically Feasible, But Equipment Requirements Represent Only One Component in Ensuring E911 Service

The Further Notice seeks comment on the NENA Model Legislation and on the E911 Consensus Group Proposal, including the feasibility of MLTS compliance with the technical requirements contained in those documents. Based on its own experience in developing ANI and ALI-capable systems, NEC submits that compliance with these proposals, at least for wireline systems, is currently feasible. Moreover, NEC believes that federal adoption of the general requirements contained in these proposals, coupled with preemption of inconsistent state and local requirements, would assist equipment manufacturers by providing predictable, nationally-uniform regulatory requirements for the design and deployment of their

products. However, if the Commission wishes to be effective in improving the provisioning of ANI and ALI from MLTS users to PSAPs, it must look beyond requirements on equipment manufacturers alone. Having E911 capable equipment will not guarantee that those capabilities are actually used in the majority of states that have not adopted statutes mandating such use. The Commission should recognize the recurring costs faced by MLTS operators in supporting E911 capabilities, and should consider additional means of reducing this potential barrier to effective and efficient E911 implementation. National rules addressing the concerns of all the E911 stakeholders will prevent the type of piece-meal approach that is sure to fall short of Commission's public safety objectives.

III. The Commission Should Act to Reduce Recurring E911 Costs Imposed on MLTS Operators

A. Costs Relating to Call Delivery and Network Interface Standards

In order to provide the PSAP with disaggregated call-back and location information, MLTS operators bear additional costs not faced by single-line users. Historically, in order for a MLTS operator to support E911, it has been necessary for the user to pay recurring fees, typically to the LEC, for the provisioning of a dedicated analog CAMA ^{5/} trunk connecting the operator's system to the 911 tandem switch. The CAMA trunk is the same type of trunk normally used between

^{5/} "CAMA" refers to a Centralized Automatic Message Accounting type of analog transmission protocol that transmits telephone numbers, via multi-frequency encoding, as part of the call set-up function. Originally used as the method for billing toll calls, it is now obsolete except for its use in 911 trunking. *See* "Future 9-1-1 Models," NENA Technical Information Document, Issue 6, Feb. 2002 at 6.

a central office and the 911 tandem switch to support E911 calls from multiple single-line users. Although the provisioning of CAMA trunks is still necessary for some MLTS operators, those subscribing to ISDN services (where available) are increasingly able to route E911 calls using ISDN capabilities, thereby avoiding the CAMA trunk provisioning costs. ^{6/}

The elimination of the need for a dedicated CAMA trunk does not, however, eliminate another significant cost: the need for the MLTS operator to purchase blocks of direct inward dialing (“DID”) telephone numbers from the LEC. ^{7/} These numbers sometimes are used solely for assignment as emergency location information numbers (“ELIN”) and are used to retrieve the caller’s ALI. Fortunately, this inefficient and costly arrangement is no longer necessary from a technical perspective. In 2000, the Telecommunications Committee (“T1”) of the American National Standards Institute (“ANSI”) issued a new ISDN network interface standard, ANSI T1.628-2000, that effectively avoids the need for DID numbers to support E911 functionality. ^{8/}

^{6/} LECs may actually prefer to avoid the use of CAMA trunks, given the limited number of trunks that a 911 tandem switch can physically accommodate.

^{7/} In some cases, the numbers obtained may be non-dialable or “pseudo”-telephone numbers.

^{8/} Alliance for Telecommunications Industry Solutions, “American National Standard for Telecommunications – Emergency Calling Services,” T1.628-2000 (May 19, 2000). In addition to cost savings, the use of the new standard would aid the Commission’s numbering resources optimization efforts by sharply reducing the quantity of numbering codes required to support E911.

Before the benefits of this new interface standard can be recognized, however, central office switches must be updated to accommodate the standard. However, exceedingly few, if any, LECs have implemented the necessary upgrade. This is perhaps not surprising, given that LECs currently have no incentive to do so, as they would lose the revenue stream generated by the sale of number blocks to MLTS operators. Accordingly, switch manufacturers have not incorporated the interface standard into their new switches, as there has been no demand from their customers (the LECs) to do so.

The NENA Model Legislation, and the new Part 64 FCC rule sections proposed by NENA recognize this barrier to promoting MLTS E911 capabilities. NENA has concluded that it is appropriate for the Commission to require “that end-user serving central office equipment provide flexible and cost effective connectivity for purposes of processing MLTS 911 calls,” and “that local exchange carriers supply services to maximize the opportunity for MLTS integration to E911 systems.” ^{9/} Accordingly, NENA’s proposed new Section 64.2101 would require that central offices be provisioned to permit connection of MLTS equipment for E911 purposes “in any accepted industry standard format, *as defined by the FCC*, requested by the MLTS operator.” ^{10/} NEC strongly supports this NENA-recommended rule.

Moreover, in view of the public safety interests at stake, NEC urges the Commission to adopt the ANSI T1.628-2000 standard as an “accepted industry

^{9/} NENA, “Request to the FCC Concerning MLTS Integration to E9-1-1, Final Recommendations,” at 1.

^{10/} *Id.* at 4.

standard,” thereby requiring LECs to enable MLTS operators to use the most efficient means of interfacing with the network.

As a companion to its FCC recommendations, NENA’s state-focused Model Legislation provides in section 6 that “telecommunications carriers are responsible for providing interconnectivity through the use of generally accepted industry standards,” as defined by the appropriate implementing state agency. ^{11/} Section 13 provides that the “choice of industry standard interface is the option of the MLTS Operator.” ^{12/} NENA indicates that leaving the interface choice to the operator, rather than the LEC, “will encourage the modernization of MLTS access to the 911 system.” ^{13/}

Under the NENA Model Legislation, in the event the LEC cannot accommodate the MLTS operator’s chosen interface standard, the operator is absolved of its duty to implement a system supporting E911 capabilities. ^{14/} In this situation, the operator is required to notify the appropriate 911 governing body of the fact that its chosen interface is not available from the LEC. ^{15/} NENA explains that this reporting requirement will provide “important market

^{11/} Model Legislation at § 6. Based on the explanation to this section, state agencies should not adopt actual standards, but should determine the acceptable sources of, or criteria for, what constitutes an “accepted industry standard.” *Id.* at Explanation to § 6.

^{12/} Model Legislation at § 13.

^{13/} *Id.* at Explanation to § 13.

^{14/} *Id.* at § 13.

^{15/} *Id.*

information to (a) regulators as to the state of E911 ubiquity, and (b) to LECs concerning the demand for new E911 interfaces.” ^{16/} NEC generally supports the Model Legislation, but notes that, despite the obligation on carriers contained in section 6 to use “generally accepted standards,” the language contained in section 13 could be interpreted as creating a compliance “gap” in those cases where the LEC does not support the operator’s chosen interface, including ANSI T1.628-2000. For this reason – and, more importantly, because many states may not adopt the legislation at all – it is important for the Commission to adopt NENA’s proposed Section 64.2101, and designate ANSI T1.628-2000 as an approved interface standard. This action would properly recognize the technical innovation that has occurred since the Commission last considered the MLTS E911 issue and would ensure that MLTS operators have the least costliest means of benefiting from E911 capabilities.

^{16/} *Id.* at Explanation to § 13.

B. Costs Relating to ALI Database Maintenance

Another notable and largely unnecessary E911 cost incurred by MLTS operators is the cost associated with providing updates to the ALI database. In order for an emergency responder to reach a 911 MLTS caller, the emergency response location data (“ERL”) must be properly entered into the ALI database. The ERL provides the emergency responder with instructions – preferably detailed – on how to reach the caller’s location. This means, therefore, that each time an employee moves to a new location within the business premises while maintaining the same station (telephone) number, the ALI database must be updated. ^{17/}

Typically, updating the ALI database involves completing a form and submitting it to the LEC, or, frequently, to the third-party vendor that administers the ALI database on behalf of the LEC and performs the actual entry of the new data. The update fees paid to the LEC (or LEC-chosen vendor) can be significant, especially when calculated over the course of the year for a large MLTS operator. These fees are unconstrained by competitive forces, as the dominant LEC still maintains a bottleneck on this service in most jurisdictions. As the recent Hatfield Report correctly indicated, “ILECs still have significant market power in the provision of 911 call routing, transport, and *data base management*.” ^{18/}

^{17/} The activation of new stations would also require a database update.

^{18/} Dale N. Hatfield, “A Report on Technical and Operational Issues Impacting the Provision of Wireless Enhanced 911 Services” (2002) at 20. *See also id.* at 32-34, discussing the potentially problematic effects of LEC pricing of essential E911 call components, including the ALI database.

In addition to the costs associated with critical ALI database updates, the current “middle-man” structure can add significant time – up to 30 days or more – to completion of the updates. Such delays can jeopardize the ability of emergency responders to locate a 911 caller that has recently changed office locations.

Excessive costs and delays in updating the ALI database are wholly unnecessary in the current digital age. There is no technical reason why MLTS operators should not be able to provide direct entry of updates through the use of existing data transfer protocols. ^{19/} Indeed, this is already happening in some jurisdictions. ^{20/} Therefore, in addition to amending its rules to require LEC acceptance of efficient MLTS/network interface standards, the Commission should likewise recognize this cost-saving technical advancement and require LECs with responsibility over ALI database management to permit direct MLTS operator data entry into the ALI database. Alternatively, the Commission should encourage the states to adopt such rules. Such action would reduce an important barrier to effective E911 implementation and, by reducing update delays, save lives.

^{19/} NENA, for example, has already developed a technical document setting out recommended ALI data exchange protocols. See “NENA Recommended Formats and Protocol for ALI Data Exchange, ALI Response and GIS Mapping,” NENA-02-010, Jan. 2002.

^{20/} See Telecommunications Industry Association (“TIA”), Subcommittee TR41.4, “PBX and KTS Support of Enhanced 9-1-1 Emergency Calling Service,” TIA-689-A at § 5.4.3 (“TIA PBX E911 Standard”) (noting that “some network access providers provide for creation and update of the ALI Database directly by the MLTS Operator,” and referencing the NENA document cited *supra* note 19).

IV. The Commission Should Recognize the ALI Capability Limitations Inherent in Wireless MLTS Equipment and Design Any New Rules Accordingly

As noted earlier, in addition to stand-alone Wireline PBX solutions, NEC offers an integrated wireless PBX solution for enterprise customers. While this equipment can transmit the calling number of the wireless handset calling 911, there are some important limitations inherent in the design of in-building wireless system that make it difficult for such systems to indicate accurately the location of the caller or even of the nearest base station. Unlike conventional cellular and PCS handsets, wireless PBX handsets often operate inside buildings where adequate GPS signals are not available. In such cases, a GPS handset-based solution is not practical. ^{21/} A network-based “triangulation” method of determining location is also problematic, given the multi-path propagation interference created by the number of walls and other signal-reflecting surfaces that are present in a typical office environment. Finally, although the system can report the location of the base station at which the 911-caller’s call is received, this will not necessarily indicate the base station nearest the caller’s location, as the signal-attenuating effects of floors and walls can result in a connection being made with a more distant, but less obstructed, base station. In situations where one wireless MLTS covers two or more nearby buildings, the caller and connecting base station could even be in different buildings if, for example, the caller is positioned near a window that provides an unobstructed path to a base station in the neighboring building.

^{21/} Moreover, simple longitude and latitude data would be of little assistance in multi-story building environments.

Due to these technical limitations, the MLTS location capability rules adopted by the Commission should not mandate that wireless MLTS equipment be capable of reporting more than the location of the base station to which the 911 caller is connected. Given the sometimes limited value of this information, however, NEC believes it may be appropriate for wireless MLTS equipment to report 911 calls to a local answering position that may better be able to ascertain the caller's actual location and direct emergency personnel accordingly. [22/](#) This complimentary requirement would provide for the best available public safety capabilities without the Commission mandating or attempting to predict future technological developments.

[22/](#) Section 5.1.4.1 of the TIA PBX E911 Standard provides that MLTS equipment generally should be capable of “alerting an answering position, attendant or designated personnel and providing calling station information when 911 is dialed. The method of alerting and indication of the station(s) that have dialed 911 shall be determined by the MLTS supplier.”

V. CONCLUSION

NEC urges the Commission to reduce the barriers to effective MLTS E911 implementation by requiring LECs to accommodate the more efficient methods of interconnecting MLTS equipment with the network and updating ALI databases, as described above. NEC also asks that the Commission issue national MLTS location capability requirements and pre-empt inconsistent state and local laws. Finally, NEC asks that the Commission, in adopting any MLTS E911 requirements, recognize the inherent limitations of wireless MLTS equipment in proving accurate location information.

Respectfully submitted,

NEC AMERICA, INC.

By: /s/ Ari Q. Fitzgerald
Ari Q. Fitzgerald
David L. Martin
HOGAN & HARTSON L.L.P.
555 Thirteenth Street, N.W.
Washington, D.C. 20004-1109
(202) 637-5600

Its Attorneys

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